Release notes for ENDF/B Development n-039_Y_089 evaluation

April 26, 2017

- `psyche` Warnings:

  1. Gamma width not in agreement with PSYCHE's expectations
     FILE 2 / SECTION 151 / ISOTOPE MASS = 89. L = 0 / AT RESONANCE ENERGY 1.15920E+04 EV. THE GAMMA WIDTH 5.42000E-01 DEVIATES TOO MUCH FROM THE AVERAGE 1.68300E-01 (0): Gamma width

```
FILE  2
   SECTION 151
        ISOTOPE MASS =  89. L =  0
                AT RESONANCE ENERGY  1.15920E+04 EV. THE GAMMA WIDTH  5.42000E-01 DEVIATES TOO MUCH FROM THE AV
```

- `psyche` Errors:

  1. A probability distribution is negative. This is bad.
     FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 374 / FROM -9.9219E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -2.9802E-08 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                        SEQUENCE NUMBER   374
                FROM -9.9219E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -2.9802E-08
```

  2. A probability distribution is negative. This is bad.
     FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 374 / FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                        SEQUENCE NUMBER   374
                FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
                FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
... [4 more lines]
```

  3. A probability distribution is negative. This is bad.
     FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 374 / FROM -9.8438E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -8.9407E-08 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                        SEQUENCE NUMBER   374
                FROM -9.8438E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -8.9407E-08
```

  4. A probability distribution is negative. This is bad.
     FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 385 / FROM -9.3750E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS 2.3842E-07 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                        SEQUENCE NUMBER   385
                FROM -9.3750E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS  2.3842E-07
```

5. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 385 / FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   385
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
... [8 more lines]
```

6. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 396 / FROM -8.7500E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   396
                 FROM -8.7500E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
```

7. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 396 / FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   396
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
... [2 more lines]
```

8. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 407 / FROM -9.8438E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -2.3842E-07 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   407
                 FROM -9.8438E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -2.3842E-07
```

9. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 407 / FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   407
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
... [10 more lines]
```

10. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 418 / FROM -7.5000E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS 1.4901E-06 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   418
                 FROM -7.5000E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS  1.4901E-06
```

11. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 418 / FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   418
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
... [14 more lines]
```

12. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 451 / FROM -8.7500E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -8.3447E-07 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   451
                 FROM -8.7500E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -8.3447E-07
```

13. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 451 / FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   451
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
... [4 more lines]
```

14. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 484 / FROM -5.0000E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -4.2617E-06 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   484
                 FROM -5.0000E-01 TO -1.0000E+00 NEGATIVE PROBABILITY IS -4.2617E-06
```

15. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 484 / FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   484
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
                 FROM -1.0000E+00 TO -1.0000E+00 NEGATIVE PROBABILITY IS -0.0000E+00
... [15 more lines]
```

16. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 484 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   484
                 ENERGY BALANCE SUMMARY: Q =  -7.13000E+05         ENERGY BALANCE SUMMARY: Q =  -7.13000E+05
                 ENERGY BALANCE SUMMARY: Q =   6.91000E+05         ENERGY BALANCE SUMMARY: Q =   6.91000E+05
```

17. A probability distribution is negative. This is bad.
FILE 6 / SECTION 16 / DISTRIBUTION IS NEGATIVE SEQUENCE NUMBER 484 / ENERGY BALANCE SUMMARY: Q = 6.91000E+05 (0): Neg. prob.

```
FILE  6
   SECTION  16
        DISTRIBUTION IS NEGATIVE                          SEQUENCE NUMBER   484
                 ENERGY BALANCE SUMMARY: Q =   6.91000E+05
```

- `recent` Warnings:

1. Statistical weight of certain L values were incorrect
0: RRR goof (a)

```
 Calculate Cross Sections from Resonance Parameters (RECENT 2015-1)
 ==========================================================================
 Retrieval Criteria-----------        MAT
 File 2 Mimimum Cross Section- 1.0000E-10 (Standard Option)
 Reactions with No Background-     Output (Resonance Contribution)
... [544 more lines]
```

- `fudge-4.0` Warnings:

1. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
Section 0 (total): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

2. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
Section 2 ((z,n)): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

3. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
   Section 3 (n[multiplicity:'2'] + Y88 + gamma): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

4. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
   Section 4 (Y90 + gamma): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

5. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
   Section 5 ((z,p)): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

6. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
   Section 6 ((z,alpha)): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

- `fudge-4.0` Errors:

1. The spin statistical weights are off, indicating missing channels
   resonances / resolved / MultiLevel_BreitWigner (Error # 0): badSpinStatisticalWeights

```
WARNING: The spin statical weights for L=1 sums to 2.25, but should sum to 3.0.  You have too few channels for r
```

2. Calculated and tabulated Q values disagree.
   reaction label 35: n[multiplicity:'2'] + Y88 + gamma (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -11462697.44590759 eV vs -1.1476e7 eV!
```

3. Energy range of data set does not match cross section range
   reaction label 35: n[multiplicity:'2'] + Y88 + gamma / Product: n / Distribution: / energyAngular - XYs3d: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (11606200.0 -> 20000000.0) vs (11606700.0 -> 20000000.0)
```

4. Energy range of data set does not match cross section range
   reaction label 35: n[multiplicity:'2'] + Y88 + gamma / Product: Y88 / Distribution: / uncorrelated - energy - XYs2d: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (11606200.0 -> 20000000.0) vs (11606700.0 -> 20000000.0)
```

5. Energy range of data set does not match cross section range
   reaction label 35: n[multiplicity:'2'] + Y88 + gamma / Product: gamma / Multiplicity: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (11606200.0 -> 20000000.0) vs (11606700.0 -> 20000000.0)
```

6. Energy range of data set does not match cross section range
reaction label 35: n[multiplicity:'2'] + Y88 + gamma / Product: gamma / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (11606200.0 -> 20000000.0) vs (11606700.0 -> 20000000.0)
```

7. Energy range of data set does not match cross section range
reaction label 35: n[multiplicity:'2'] + Y88 + gamma / Product: gamma / uncorrelated - energy - XYs2d: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (11606200.0 -> 20000000.0) vs (11606700.0 -> 20000000.0)
```

8. Calculated and tabulated Q values disagree.
reaction label 36: n + H1 + Sr88 + gamma (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -7015596.226745605 eV vs -7.071e6 eV!
```

9. If an outgoing energy distribution ends with more than one energy with probability=0, proper unitbase treatment is unclear. Distribution should end with exactly one P=0 point.
reaction label 36: n + H1 + Sr88 + gamma / Product: n / Distribution: / energyAngular - XYs3d: (Error # 0): extraOutgoingEnergy

```
WARNING: Extra zero-probability outgoing energies found at incident energy 9.e6 eV
WARNING: Extra zero-probability outgoing energies found at incident energy 9.5e6 eV
WARNING: Extra zero-probability outgoing energies found at incident energy 1.e7 eV
WARNING: Extra zero-probability outgoing energies found at incident energy 1.05e7 eV
        ... plus 19 more instances of this message
```

10. If an outgoing energy distribution ends with more than one energy with probability=0, proper unitbase treatment is unclear. Distribution should end with exactly one P=0 point.
reaction label 36: n + H1 + Sr88 + gamma / Product: H1 / Distribution: / energyAngular - XYs3d: (Error # 0): extraOutgoingEnergy

```
WARNING: Extra zero-probability outgoing energies found at incident energy 9.e6 eV
WARNING: Extra zero-probability outgoing energies found at incident energy 1.1e7 eV
```

11. Found a negative probability
reaction label 77: H1 + (Sr89_c ->Sr89 + gamma) / Product: H1 / Distribution: / energyAngular - XYs3d: (Error # 0): Negative prob.

```
WARNING: Negative probabilities encountered. Incident energy: 1.3e7 eV, worst case: -3.91670201691e-12
WARNING: Negative probabilities encountered. Incident energy: 1.35e7 eV, worst case: -2.57227053445e-12
WARNING: Negative probabilities encountered. Incident energy: 1.4e7 eV, worst case: -2.11642044702e-12
WARNING: Negative probabilities encountered. Incident energy: 1.45e7 eV, worst case: -2.73747790872e-12
        ... plus 6 more instances of this message
```

12. Calculated and tabulated Q values disagree.
reaction label 78: He4 + Rb86 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 735064.254699707 eV vs 6.91e5 eV!
```

13. Calculated and tabulated Q values disagree.
reaction label 79: He4 + Rb86_e1 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 246864.254699707 eV vs 2.028e5 eV!
```

14. Calculated and tabulated Q values disagree.
reaction label 80: He4 + Rb86_e2 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 179014.254699707 eV vs 134950. eV!
```

15. Calculated and tabulated Q values disagree.
reaction label 81: He4 + Rb86_e3 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 178064.254699707 eV vs 1.34e5 eV!
```

16. Calculated and tabulated Q values disagree.
reaction label 82: He4 + Rb86_e4 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -45235.74530029297 eV vs -8.93e4 eV!
```

17. Calculated and tabulated Q values disagree.
reaction label 83: He4 + Rb86_e5 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -138135.745300293 eV vs -1.822e5 eV!
```

18. Calculated and tabulated Q values disagree.
reaction label 84: He4 + Rb86_e6 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -243635.745300293 eV vs -2.877e5 eV!
```

19. Calculated and tabulated Q values disagree.
reaction label 85: He4 + Rb86_e7 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -292135.745300293 eV vs -3.362e5 eV!
```

20. Calculated and tabulated Q values disagree.
reaction label 86: He4 + Rb86_e8 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -297635.745300293 eV vs -3.417e5 eV!
```

21. Calculated and tabulated Q values disagree.
reaction label 87: He4 + Rb86_e9 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -357735.745300293 eV vs -4.018e5 eV!
```

22. Calculated and tabulated Q values disagree.
reaction label 88: He4 + Rb86_e10 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -370535.745300293 eV vs -4.146e5 eV!
```

23. Calculated and tabulated Q values disagree.
reaction label 89: He4 + Rb86_e11 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -386935.745300293 eV vs -4.31e5 eV!
```

24. Calculated and tabulated Q values disagree.
reaction label 90: He4 + Rb86_e12 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -420935.745300293 eV vs -4.65e5 eV!
```

25. Calculated and tabulated Q values disagree.
reaction label 91: He4 + Rb86_e13 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -461335.745300293 eV vs -5.054e5 eV!
```

26. Calculated and tabulated Q values disagree.
reaction label 92: He4 + Rb86_e14 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -512935.745300293 eV vs -5.57e5 eV!
```

27. Calculated and tabulated Q values disagree.
reaction label 93: He4 + Rb86_e15 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -570035.745300293 eV vs -6.141e5 eV!
```

28. Calculated and tabulated Q values disagree.
reaction label 94: He4 + Rb86_e16 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -573935.745300293 eV vs -6.18e5 eV!
```

29. Calculated and tabulated Q values disagree.
reaction label 95: He4 + Rb86_e17 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -654335.745300293 eV vs -6.984e5 eV!
```

30. Calculated and tabulated Q values disagree.
reaction label 96: He4 + Rb86_e18 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -676935.745300293 eV vs -7.21e5 eV!
```

31. Calculated and tabulated Q values disagree.
reaction label 97: He4 + Rb86_e19 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -703935.745300293 eV vs -7.48e5 eV!
```

32. Calculated and tabulated Q values disagree.
reaction label 98: He4 + Rb86_e20 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -735735.745300293 eV vs -7.798e5 eV!
```

33. Calculated and tabulated Q values disagree.
reaction label 99: He4 + Rb86_e21 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -766635.745300293 eV vs -8.107e5 eV!
```

34. Calculated and tabulated Q values disagree.
reaction label 100: He4 + Rb86_e22 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -814935.745300293 eV vs -8.59e5 eV!
```

35. Calculated and tabulated Q values disagree.
reaction label 101: He4 + Rb86_e23 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -823435.745300293 eV vs -8.675e5 eV!
```

36. Calculated and tabulated Q values disagree.
reaction label 102: He4 + Rb86_e24 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -931735.745300293 eV vs -9.758e5 eV!
```

37. Calculated and tabulated Q values disagree.
reaction label 103: He4 + Rb86_e25 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -948635.745300293 eV vs -9.927e5 eV!
```

38. Calculated and tabulated Q values disagree.
reaction label 104: He4 + Rb86_e26 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -974135.745300293 eV vs -1.0182e6 eV!
```

39. Calculated and tabulated Q values disagree.
reaction label 105: He4 + Rb86_e27 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -1002935.745300293 eV vs -1.047e6 eV!
```

40. Calculated and tabulated Q values disagree.
reaction label 106: He4 + Rb86_e28 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -1025935.745300293 eV vs -1.07e6 eV!
```

41. Calculated and tabulated Q values disagree.
reaction label 107: He4 + Rb86_e29 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -1084935.745300293 eV vs -1.129e6 eV!
```

42. Calculated and tabulated Q values disagree.
reaction label 108: He4 + Rb86_e30 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -1154235.745300293 eV vs -1.1983e6 eV!
```

43. Calculated and tabulated Q values disagree.
reaction label 109: He4 + Rb86_e31 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -1165935.745300293 eV vs -1.21e6 eV!
```

44. Calculated and tabulated Q values disagree.
reaction label 110: He4 + Rb86_e32 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -1182035.745300293 eV vs -1.2261e6 eV!
```

45. Calculated and tabulated Q values disagree.
reaction label 111: He4 + Rb86_e33 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -1191035.745300293 eV vs -1.2351e6 eV!
```

46. Calculated and tabulated Q values disagree.
reaction label 112: He4 + Rb86_e34 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -1218035.745300293 eV vs -1.2621e6 eV!
```

47. Calculated and tabulated Q values disagree.
reaction label 113: He4 + Rb86_e35 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -1289835.745300293 eV vs -1.3339e6 eV!
```

48. Calculated and tabulated Q values disagree.
reaction label 114: He4 + (Rb86_c ->Rb86 + gamma) (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -1289835.745300293 eV vs -1.3339e6 eV!
```

49. Calculated and tabulated Q values disagree.
reaction label 116: n + He4 + Rb85 + gamma (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -7908937.097930908 eV vs -7.959e6 eV!
```

50. If an outgoing energy distribution ends with more than one energy with probability=0, proper unitbase treatment is unclear. Distribution should end with exactly one P=0 point.
reaction label 116: n + He4 + Rb85 + gamma / Product: n / Distribution: / energyAngular - XYs3d: (Error # 0): extraOutgoingEnergy

```
WARNING: Extra zero-probability outgoing energies found at incident energy 1.2e7 eV
WARNING: Extra zero-probability outgoing energies found at incident energy 1.25e7 eV
WARNING: Extra zero-probability outgoing energies found at incident energy 1.3e7 eV
WARNING: Extra zero-probability outgoing energies found at incident energy 1.35e7 eV
        ... plus 13 more instances of this message
```

51. If an outgoing energy distribution ends with more than one energy with probability=0, proper unitbase treatment is unclear. Distribution should end with exactly one P=0 point.
reaction label 117: n[multiplicity:'2'] + H1 + Sr87 / Product: n / Distribution: / energyAngular - XYs3d: (Error # 0): extraOutgoingEnergy

```
WARNING: Extra zero-probability outgoing energies found at incident energy 2.e7 eV
```

- `njoy2012` Warnings:

1. Evaluation has no unresolved resonance parameters given
unresr...calculation of unresolved resonance cross sections (0): No URR

```
 ---message from unresr---mat 3925 has no unresolved parameters
                          copy as is to nout
```

2. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (0): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt 41 does not give recoil za= 38087
                          one-particle recoil approx. used.
```

3. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (1): HEATR/hinit (4)

```
 ---message from hinit---mf6, mt102 does not give recoil za= 39090
                          photon momentum recoil used.
```

4. Evaluation has no unresolved resonance parameters given
   purr...probabalistic unresolved calculation (0): No URR

```
 ---message from purr---mat 3925 has no unresolved parameters
                          copy as is to nout
```

5. Coefficient mismatch of some sort
   covr...process covariance data (1): COVR/matshd (2)

```
 ---message from matshd---processing of mat/mt 3925/107 vs. mat1/mt1 3925/107
                          largest coefficient=  2.84267E+00 at index 473 495
```

6. The number of coefficients was too large in a covariance
   covr...process covariance data (2): Cov:Too many coeff.

```
 ---message from matshd--- 132 coefficients > 1
                          reset and continue.
```

7. The number of coefficients was too large in a covariance
   covr...process covariance data (3): Cov:Too many coeff.

```
 ---message from matshd--- 118 coefficients > 2
                          reset and continue
```

- `njoy2012` Errors:

1. An angular distribution is negative
   acer...monte carlo neutron and photon data (0): Neg. P(Ejμ) (b)

```
 ---message from ptleg2---negative probs found
                             5 for mt=649 e= 8.127E+00
```

2. An angular distribution is negative
   acer...monte carlo neutron and photon data (1): Neg. P(Ejμ) (b)

```
 ---message from ptleg2---negative probs found
                            10 for mt=649 e= 8.582E+00
```

3. An angular distribution is negative
   acer...monte carlo neutron and photon data (2): Neg. P(Ejμ) (b)

```
 ---message from ptleg2---negative probs found
                            11 for mt=649 e= 9.050E+00
```

4. An angular distribution is negative
   acer...monte carlo neutron and photon data (3): Neg. P(Ejμ) (b)

```
 ---message from ptleg2---negative probs found
                            22 for mt=649 e= 9.530E+00
```

5. An angular distribution is negative
   acer...monte carlo neutron and photon data (4): Neg. P(Ejμ) (b)

```
 ---message from ptleg2---negative probs found
                           103 for mt=649 e= 1.002E+01
```

6. An angular distribution is negative
acer...monte carlo neutron and photon data (5): Neg. P(Ejμ) (b)

```
 ---message from ptleg2---negative probs found
                            40 for mt=649 e= 1.053E+01
```

7. An angular distribution is negative
acer...monte carlo neutron and photon data (6): Neg. P(Ejμ) (b)

```
 ---message from ptleg2---negative probs found
                            75 for mt=649 e= 1.104E+01
```

8. An angular distribution is negative
acer...monte carlo neutron and photon data (7): Neg. P(Ejμ) (b)

```
 ---message from ptleg2---negative probs found
                           129 for mt=649 e= 1.157E+01
```

9. An angular distribution is negative
acer...monte carlo neutron and photon data (8): Neg. P(Ejμ) (b)

```
 ---message from ptleg2---negative probs found
                           105 for mt=649 e= 1.296E+01
```

10. An angular distribution is negative
acer...monte carlo neutron and photon data (9): Neg. P(Ejμ) (b)

```
 ---message from ptleg2---negative probs found
                           171 for mt=649 e= 1.442E+01
```